Wasteload Analysis - Total Maximum Daily Load (Lake TMDL)

2/24/09
10:30 AM

Facility: **Grantsville Utah Lagoons** **UPDES No: UT- 0022130**
Discharging to: **Ditch to Brackish Irrigation Ponds [Blue Lakes]**

I. Introduction

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on lake water quality. The wasteload analysis does not take into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary water quality parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), unionized ammonia (as a function of pH and temperature, measured and evaluated interms of total ammonia), and dissolved oxygen.

Mathematical water quality modeling is employed to determine water quality response to point source discharges. Models aid in the effort of anticipating water quality at future effluent flows at critical environmental conditions (e.g., high temperature, high pH, etc).

The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions as determined by staff of the Division of Water Quality.

II. Receiving Water and Lake / Reservoir Classification

Ditch to Brackish Irrigation Ponds [Blue S

III. Numeric Water Quality Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Function of Temperature and pH	pH	Temp
	1.151 mg/l as N (4 Day Average)	8.20	22.0
	5.72 mg/l as N (1 Hour Average)	8.20	22.0
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average)		
	0.019 mg/l (1 Hour Average)		
Chronic Dissolved Oxygen (DO)	5.50 mg/l (30 Day Average)		
	4.00 mg/l (7Day Average)		
	3.00 mg/l (1 Day Average		
Maximum Total Dissolved Solids [Class 4 Ag]	1200 mg/l		
Maximum Boron [Class 4 Ag]	750 mg/l		

Acute and Chronic Heavy Metals (Dissolved)

	4 Day Average (Chronic) Standard			1 Hour Average (Acute) Standard		
Parameter	**Concentration**		**CF**	**Concentration**		**CF**
Aluminum	87.000	ug/l		750	ug/l	
Antimony		ug/l			ug/l	
Arsenic	190.000	ug/l		360.00	ug/l	
Asbestos		ug/l			ug/l	
Barium		ug/l		1000.00	ug/l	
Beryllium		ug/l			ug/l	
Cadmium	1.360	ug/l	0.806	22.90	ug/l	0.841
Chromium III	560.930	ug/l	0.860	4312.20	ug/l	0.316
ChromiumVI	11.000	ug/l		16.00	ug/l	
Copper	73.996	ug/l	0.960	137.91	ug/l	0.960
Cyanide	5.200	ug/l		22.00	ug/l	
Iron		ug/l		1000.00	ug/l	
Lead	31.864	ug/l	0.431	817.67	ug/l	0.431
Mercury	0.012	ug/l		2.40	ug/l	
Nickel	420.77	ug/l	0.997	3788.33	ug/l	0.998

Selenium	4.600	ug/l	0.920	18.40	ug/l		0.920
Silver		ug/l		284.72	ug/l		
Thallium							
Zinc	958.897	ug/l	0.986	972.51	ug/l		0.978
Based upon a Hardness of 1183.77 mg/l as CaCO3				Based upon 1225.14 mg/l as CaCO3			

Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard Concentration		1 Hour Average (Acute) Standard Concentration	
Aldrin			1.500	ug/l
Chlordane	0.0043	ug/l	1.200	ug/l
DDT, DDE	0.001	ug/l	0.550	ug/l
Dieldrin	0.0019	ug/l	1.250	ug/l
Endosulfan	0.056	ug/l	0.110	ug/l
Endrin	0.0023	ug/l	0.090	ug/l
Guthion			0.010	ug/l
Heptachlor	0.0038	ug/l	0.260	ug/l
Lindane	0.08	ug/l	1.000	ug/l
Methoxychlor			0.030	ug/l
Mirex			0.010	ug/l
Parathion			0.040	ug/l
PCB's	0.014	ug/l	2.000	ug/l
Pentachlorophenol	13.00	ug/l	20.000	ug/l
Toxephene	0.0002	ug/l	0.730	ug/l

IV. Numeric Water Quality Standards for Protection of Agriculture

TDS	1200	mg/l
Arsenic	100	ug/l
Boron	750	ug/l
Cadmium	10	ug/l
Chromium	100	ug/l
Copper	200	ug/l
Lead	100	ug/l
Selenium	50	ug/l

VI. Numeric Water Quality Standards the Protection of Human Health from Water & Fish Consumption [Toxics]

	Maximum Conc., ug/l - Acute Standards	
	Class 1C	**Class 3A, 3B**
Metals		
Antimony		640.0 ug/l
Copper		
Nickel		4600.00 ug/l
Selenium		4200.00 ug/l
Thallium		6.30 ug/l
Zinc		2600.00 ug/l
Cyanide		220000.00 ug/l
Asbestos		
Dioxin		
2,3,7,8-TCDD Dioxin		5.10E-09 ug/l
Toxic Organics		
Acrolein		290 ug/l
Acrylonitrile		0.25 ug/l
Benzene		51 ug/l
Bromoform		140 ug/l
Carbon Tetrachloride		1.6 ug/l
Chlorobenzene		21000 ug/l
Chlorodibromomethane		13
Chloroethane		ug/l
2-Chloroethylvinyl Ether		
Chloroform		470 ug/l
Dichlorobromomethane		17
1,1-Dichloroethane		
1,2-Dichloroethane		37 ug/l
1,1-Dichloroethylene		3.2 ug/l
1,2-Dichloropropane		15 ug/l
1,3-Dichloropene		1700 ug/l
Ethylbenzene		29000 ug/l
Methyl bromide (HM)		1500 ug/l
Methyl chloride (HM)		ug/l
Methylene chloride (HM)		590 ug/l
1,1,2,2-Tetrachloroethane		4 ug/l
Tetrachloroethylene		3.3
Toluene		200000 ug/l
1,2-trans-Dichloroethylene		140000 ug/l
1,1,1-Trichloroethane		ug/l
1,1,2-Trichloroethane		16 ug/l
Trichloroethylene		30 ug/l
Vinyl chloride		530 ug/l
2-Chlorophenol		150 ug/l
2,4-Dichlorophenol		290 ug/l
2,4-Dimethylphenol		850 ug/l
2-Methyl-4,6-Dinitrophenol		280
2,4-Dinitrophenol		5300
2-Nitrophenol		
4-Nitrophenol		
3-Methyl-4-Clorophenol		
Pentachlorophenol		3.00 ug/l
Phenol		1700000 ug/l
2,4,6-Trichlorophenol		2.4 ug/l
Acenaphthylene (PAH)		990 ug/l
Acenapthylene		
Anthracene (PAH)		40000 ug/l
Benzidine		0.00020 ug/l
Benzo(a)anthracene (PAH)		0.018 ug/l

Benzo(a)pyrene (PAH)	0.018 ug/l
Benzo(b)fluoranthene (PAH)	0.018 ug/l
Benzo(a)pyrene (PAH)	
Benzo(k)fluoranthene (PAH)	0.018 ug/l
Bis(2-chloroethoxy) methane	
Bis(2-chloroethyl)Ether	0.53 ug/l
Bis(2-chloroisopropyl) ether	65000 ug/l
Bis2-EthylbexylPhthalate	2.2 ug/l
4-Bromophenyl Phenyl Ether	ug/l
Butylbenzyl Phthalate	1900 ug/l
2-Chloronapthalene	1600 ug/l
4-Chloropheny Phenyl Ether	
Chrysene (PAH)	0.018 ug/l
Dibenzo(a,h)anthracene (PAH)	0.018 ug/l
1,2-Dichlorobenzene	17000 ug/l
1,3-Dichlorobenzene	960 ug/l
1,4-Dichlorobenzene	2600 ug/l
3,3'-Dichlorobenzidine	0.028 ug/l
Diethyl phthalate	44000 ug/l
Dimethyl phthlate	1100000 ug/l
Di-n-Butyl Phthalate	4500 ug/l
2,4-Dinitrotoluene	3.4 ug/l
2,6-Dinitrotoluene	
Di-n-Octyl Phthalate	
1,2-Diphenylhydrazine	0.2 ug/l
Fluoranthene	140 ug/l
Fluorene	5300 ug/l
Hexachlorobenzene	0.00029 ug/l
Hexachlorobutadiene	18 ug/l
Hexachloroethane	3.3 ug/l
Hexachlorocyclopentadiene	17000 ug/l
Ideno 1,2,3-(c,d)Pyrene	0.018 ug/l
Isophorone	960 ug/l
Napthalene	
Nitrobenzene	690.00 ug/l
N-Nitrosodimethylamine	3.00 ug/l
N-Nitrosodi-n-Propylamine	0.51 ug/l
N-Nitrosodiphenylamine	6.0 ug/l
Phenanthrene	
Pyrene	4.000 ug/l
1,2,4-Trichlorobenzene	940 ug/l
Pesticides	
Aldrin	0.00005 ug/l
alpha-BHC	0.0049 ug/l
beta-BHC	0.017 ug/l
gamma-BHC	0.063 ug/l
delta-BHC	
Chlordane	0.00083 ug/l
4,4'-DDT	0.00022 ug/l
4,4'-DDE	0.00022 ug/l
4,4'-DDD	0.00031 ug/l
Dieldrin	0.000054 ug/l
alpha-Endosulfan	89 ug/l
beta-Endosulfan	89 ug/l
Endosulfan sulfate	89 ug/l
Endrin	0.81 ug/l
Endrin aldehyde	0.3 ug/l
Heptachlor	0.000079 ug/l
Heptachlor epoxide	0.000039 ug/l

PCB's	
Polychlorinated Biphenyls	0.000064 ug/l
Pesticide	
Toxaphene	0.00028 ug/l

There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.

VII. Mathematical Modeling of Water Quality Quality

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

Coefficients used in the model were based, in part, upon the following references:

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

VIII. Modeling Information

The required information for the model may include the following information for both the lake and effluent conditions:

Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l
D.O. mg/l	

Other Conditions

In addition to the lake and effluent conditions, the models require a variety of physical and biological coefficients and other technical information. In the process of actually establishing the permit limits for an effluent, values are used based upon the available data, model calibration, literature values, site visits and best professional judgement.

Model Inputs

Lake Information	Temp. Deg. C	pH	T-NH3 mg/l as N	BOD mg/l	DO mg/l	TRC mg/l	TDS mg/l	Metals ug/l
	22.0	8.2	0.00	N/A	N/A	0.00	1187.0	0.0

	Season	Flow, MGD	Temp.
Discharge Information	All Seasons	0.760	20.0

IX. Effluent Limitations based upon Water Quality Standards

Effluent Limitation for Flow

All Seasons
Not to Exceed: 0.76 MGD Daily Average
1.18 cfs Daily Average

WET Requirements As determined by Permits & Compliance Branch

Effluent Limitation for Biological Oxygen Demand (BOD)

	Concentration
30 Day Average	25.0 mg/l as BOD5
30 Day Average	20.0 mg/l as CBOD5

Effluent Limitation for Dissolved Oxygen (DO)

	Concentration **1 Day Average (Acute)**
30 Day Average	5.00 mg/l

Effluent Limitation for Total Ammonia

	4 Day Average [Chronic] **Concentration**	**Load**
All Seasons	41.25 mg/l as N	261.4 lbs/day

	1 Hour Average [Acute] **Concentration**	**Load**
	21.1 mg/l as N	133.5 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 50.%.

Effluent Limitation for Total Residual Chlorine

	4 Day Average [Chronic] **Concentration**	**Load**
All Seasons	0.124 mg/l	0.787 lbs/day

	1 Hour Average [Acute] **Concentration**	**Load**
	0.038 mg/l	0.2378 lbs/day

Effluent Limitations for Metals

	4 Day Average (Chronic)		**1 Hour Average (Acute)**	
	Concentration	**Load**	**Concentration**	**Load**
Aluminum	981.69 ug/l*	116.4 lbs/day	1481.00 ug/l	175.6 lbs/day
Arsenic	2143.92 ug/l	254.2 lbs/day	710.88 ug/l*	84.3 lbs/day
Barium			1974.66 ug/l	234.2 lbs/day
Cadmium	15.35 ug/l*	1.8 lbs/day	45.22 ug/l	5.4 lbs/day

Chromium III	6329.41	ug/l*	750.5	lbs/day	8515.14	ug/l	1,009.7 lbs/day
ChromiumVI	124.12	ug/l	14.7	lbs/day	31.59	ug/l*	3.7 lbs/day
Copper	834.96	ug/l	99.0	lbs/day	272.33	ug/l*	32.3 lbs/day
Iron					1974.66	ug/l	234.2 lbs/day
Lead	359.54	ug/l*	42.6	lbs/day	1614.63	ug/l	191.5 lbs/day
Mercury	0.14	ug/l*	0.016	lbs/day	4.74	ug/l	0.6 lbs/day
Nickel	4747.85	ug/l*	563.0	lbs/day	7480.67	ug/l	887.1 lbs/day
Selenium	51.91	ug/l	6.2	lbs/day	36.33	ug/l*	4.3 lbs/day
Silver					562.23	ug/l	66.7 lbs/day
Zinc	10819.99	ug/l	1,283.0	lbs/day	1920.38	ug/l*	227.7
TDS**					2369.60	mg/l	140.49 tons / day

* Most stringent between Chronic & Acute Effluent Limitations

** Does not apply to brackish receiving waters or to the Great Salt Lake

Effluent Limitations for Organics [Pesticides]

	4 Day Average		1 Hour Average	
Pesticide	**Concentration**	**Load**	**Concentration**	**Load**
Aldrin			2.9620 ug/l	351.23 lbs/day
Chlordane	0.0485 ug/l*	5.75 lbs/day	2.3696 ug/l	280.99 lbs/day
DDT, DDE	0.0113 ug/l*	1.34 lbs/day	1.0861 ug/l	128.79 lbs/day
Dieldrin	0.0214 ug/l*	2.54 lbs/day	2.4683 ug/l	292.69 lbs/day
Endosulfan	0.6319 ug/l	74.93 lbs/day	0.2172 ug/l*	25.76 lbs/day
Endrin	0.0260 ug/l*	3.08 lbs/day	0.1777 ug/l	21.07 lbs/day
Guthion			0.0197 ug/l	2.34 lbs/day
Heptachlor	0.0429 ug/l*	5.08 lbs/day	0.5134 ug/l	60.88 lbs/day
Lindane	0.9027 ug/l*	107.04 lbs/day	1.9747 ug/l	234.16 lbs/day
Methoxychlor			0.0592 ug/l	7.02 lbs/day
Mirex			0.0197 ug/l	2.34 lbs/day
Parathion			0.0790 ug/l	9.37 lbs/day
PCB's	0.1580 ug/l*	18.73 lbs/day	3.9493 ug/l	468.31 lbs/day
Pentachlorophenol	146.6893 ug/l	17394.42 lbs/day	39.4933 ug/l*	4683.11 lbs/day
Toxephene	0.0023 ug/l*	0.27 lbs/day	1.4415 ug/l	170.93 lbs/day

Effluent Limitations for Protection of Human Health [Toxics Rule]
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)

	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Toxic Organics			[6.5 g for 70 Kg Person over 70 Yr. Period]	
Acrolein			572.65 ug/l	67.9 lbs/day
Acrylonitrile			0.49 ug/l	0.1 lbs/day
Benzene			100.71 ug/l	11.9 lbs/day
Bromoform			276.45 ug/l	32.8 lbs/day
Carbon Tetrachloride			3.16 ug/l	0.4 lbs/day
Chlorobenzene			41467.93 ug/l	4917.3 lbs/day
Chlorodibromomethane			25.67 ug/l	3.0 lbs/day
Chloroethane			0.00 ug/l	0.0 lbs/day
2-Chloroethylvinyl Ether			0.00 ug/l	0.0 lbs/day
Chloroform			928.09 ug/l	110.1 lbs/day
Dichlorobromomethane			33.57 ug/l	4.0 lbs/day
1,1-Dichloroethane			0.00 ug/l	0.0 lbs/day
1,2-Dichloroethane			73.06 ug/l	8.7 lbs/day
1,1-Dichloroethylene			6.32 ug/l	0.7 lbs/day
1,2-Dichloropropane			29.62 ug/l	3.5 lbs/day
1,3-Dichloropene			3356.93 ug/l	398.1 lbs/day
Ethylbenzene			57265.24 ug/l	6790.5 lbs/day
Methyl bromide (HM)			2962.00 ug/l	351.2 lbs/day
Methyl chloride (HM)			0.00 ug/l	0.0 lbs/day
Methylene chloride (HM)			1165.05 ug/l	138.2 lbs/day
1,1,2,2-Tetrachloroethane			7.90 ug/l	0.9 lbs/day
Tetrachloroethylene			6.52 ug/l	0.8 lbs/day
Toluene			394932.71	
1,2-trans-Dichloroethylene			276452.90 ug/l	32781.8 lbs/day
1,1,1-Trichloroethane			0.00 ug/l	0.0 lbs/day
1,1,2-Trichloroethane			31.59 ug/l	3.7 lbs/day
Trichloroethylene			59.24 ug/l	7.0 lbs/day
Vinyl chloride			1046.57 ug/l	124.1 lbs/day
2-Chlorophenol			296.20 ug/l	35.1 lbs/day
2,4-Dichlorophenol			572.65 ug/l	67.9 lbs/day
2,4-Dimethylphenol			1678.46 ug/l	199.0 lbs/day
2-Methyl-4,6-Dinitrophenol			552.91 ug/l	65.6 lbs/day
2,4-Dinitrophenol			10465.72 ug/l	1241.0 lbs/day
2-Nitrophenol			0.00 ug/l	0.0 lbs/day
4-Nitrophenol			0.00 ug/l	0.0 lbs/day
3-Methyl-4-Clorophenol			0.00 ug/l	0.0 lbs/day
Pentachlorophenol			5.92 ug/l	0.7 lbs/day
Phenol			3356928 ug/l	398065 lbs/day
2,4,6-Trichlorophenol			4.74 ug/l	0.6 lbs/day
Acenaphthylene (PAH)			1954.92 ug/l	231.8 lbs/day
Acenapthylene			0.00 ug/l	0.0 lbs/day
Anthracene (PAH)			78986.54 ug/l	9366.2 lbs/day
Benzidine			0.00 ug/l	0.0 lbs/day
Benzo(a)anthracene (PAH)			0.04 ug/l	0.0 lbs/day
Benzo(a)pyrene (PAH)			0.04 ug/l	0.0 lbs/day
Benzo(b)fluoranthene (PAH)			0.04 ug/l	0.0 lbs/day
Benzo(a)pyrene (PAH)			0.00 ug/l	0.00E+00 lbs/day
Benzo(k)fluoranthene (PAH)			0.04 ug/l	0.0 lbs/day
Bis(2-chloroethoxy) methane			0.00 ug/l	0.0 lbs/day
Bis(2-chloroethyl)Ether			1.05 ug/l	0.1 lbs/day
Bis(2-chloroisopropyl) ether			128353.13 ug/l	15220.1 lbs/day
Bis2-EthylbexylPhthalate			4.34 ug/l	0.5 lbs/day
4-Bromophenyl Phenyl Ether			0.00 ug/l	0.000 lbs/day
Butylbenzyl Phthalate			3751.86 ug/l	444.896 lbs/day
2-Chloronapthalene			3159.46 ug/l	374.649 lbs/day
4-Chloropheny Phenyl Ether			0.00 ug/l	0.000 lbs/day

Chrysene (PAH)	0.04	ug/l	0.004 lbs/day
Dibenzo(a,h)anthracene (PAH)	0.04		
1,2-Dichlorobenzene	33569.28	ug/l	3980.6 lbs/day
1,3-Dichlorobenzene	1895.68	ug/l	224.8 lbs/day
1,4-Dichlorobenzene	5134.13	ug/l	608.8 lbs/day
3,3'-Dichlorobenzidine	0.06	ug/l	0.0 lbs/day
Diethyl phthalate	86885.20	ug/l	10302.8 lbs/day
Dimethyl phthlate	2172129.90	ug/l	257571.2 lbs/day
Di-n-Butyl Phthalate	8885.99	ug/l	1053.7 lbs/day
2,4-Dinitrotoluene	6.71		
2,6-Dinitrotoluene	0.00		
Di-n-Octyl Phthalate	0.00	ug/l	0.00000 lbs/day
1,2-Diphenylhydrazine	0.39	ug/l	0.04683 lbs/day
Fluoranthene	276.45	ug/l	32.78178 lbs/day
Fluorene	10465.72	ug/l	1241.02470 lbs/day
Hexachlorobenzene	0.00	ug/l	0.00007 lbs/day
Hexachlorobutadiene	35.54	ug/l	4.21480 lbs/day
Hexachloroethane	6.52	ug/l	0.77271 lbs/day
Hexachlorocyclopentadiene	33569.28	ug/l	3980.65 lbs/day
Ideno 1,2,3-(c,d)Pyrene	0.04	ug/l	0.00421 lbs/day
Isophorone	1895.68	ug/l	224.78938 lbs/day
Napthalene	0.00	ug/l	0.00000 lbs/day
Nitrobenzene	1362.52	ug/l	161.56737 lbs/day
N-Nitrosodimethylamine	5.92		
N-Nitrosodi-n-Propylamine	1.01		
N-Nitrosodiphenylamine	11.85		
Phenanthrene	0.00	ug/l	0.000000 lbs/day
Pyrene	7.90	ug/l	0.936622 lbs/day
1,2,4-Trichlorobenzene	1856.18	ug/l	220.106267 lbs/day
	0.00	ug/l	0.000000 lbs/day
Pesticides	0.00	ug/l	0.000000 lbs/day
Aldrin	0.00	ug/l	0.000012 lbs/day
alpha-BHC	0.01	ug/l	0.001147 lbs/day
beta-BHC	0.03		
gamma-BHC	0.12		
delta-BHC	0.00		
Chlordane	0.00		
4,4'-DDT	0.00		
4,4'-DDE	0.00	ug/l	5.15E-05 lbs/day
4,4'-DDD	0.00		
Dieldrin	0.00		
alpha-Endosulfan	175.75		
beta-Endosulfan	175.75	ug/l	20.8 lbs/day
Endosulfan sulfate	175.75		
Endrin	1.60	ug/l	0.2 lbs/day
Endrin aldehyde	0.59		
Heptachlor	0.00	ug/l	0.0 lbs/day
Heptachlor epoxide	0.00	ug/l	0.0 lbs/day
	0.00		
PCB's	0.00		
Polychlorinated Biphenyls	0.00	ug/l	0.0 lbs/day

Pesticide

Toxaphene

	1 Hour Average (Acute) Standard		
	Concentration		**Load**
Arsenic	197.47	ug/l	23.42 lbs / day
Boron	1481.00	ug/l	175.62 lbs / day
Cadmium	19.75	ug/l	2.34 lbs / day
Chromium	197.47	ug/l	23.42 lbs / day
Copper	394.93	ug/l	46.83 lbs / day
Lead	197.47	ug/l	23.42 lbs / day

Selenium	98.73 ug/l	11.71 lbs / day

Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]

	Acute		Chronic	
	ug/l	lbs/day	ug/l	lbs/day
Aluminum	1481.00	9385.3	981.69	6221.1
Antimony	0.00	0.0		
Arsenic	175.75	1113.7	2143.92	13586.3
Asbestos	0.00E+00	0.0E+00		
Cadmium	19.75	125.1	15.35	97.3
Chromium (III)	8515.14	53961.6	6329.41	40110.3
Chromium (VI)	31.59	200.2	124.12	786.6
Copper	272.33	1725.8	834.96	5291.2
Cyanide	1.60	10.1		
Iron	1974.66	12513.7		
Lead	197.47	1251.4	359.54	2278.5
Mercury	0.00	0.0	0.14	0.9
Nickel	0.00	0.0	4747.85	30087.7
Selenium	36.33	230.3	51.91	328.9
Silver	562.23	3562.9		
Zinc	1920.38	12169.7	10819.99	68567.7

Effluent Indicators / Targets for Pollution Indicators

Water quality targets for pollution Indicators will be met with an effluent target limit as follows:

Indicator	Target		Effluent Target	
	mg/l		mg/l	lbs/day
Gross Beta (pCi/l)	50.0	pCi/L		
BOD	5.0		9.87	56.42
Nitrates as N	4.0		7.90	45.14
Total Phosphorus as P	0.05		0.10	0.56
Total Suspended Solids	90.0		177.72	1015.54

Other Effluent Limitations are based upon R317-1.

X. Antidegradation Level I Review

An Anti-degradation Level II review is not required since the water quality will not be lowered by the proposed activity (e.g., a UPDES permit is being renewed and the proposed effluent concentration value and the pollutant loading is equal to or les than the existing effluent concentrations value and pollutant loading). [R317-2-3.5(b).1]

XI. Colorado River Salinity Forum Considerations

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless shown that this is not attainable. Refer to the Forum's Guidlines for additional information.

The permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations.

XII. Summary Comments

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

The permit writers may utilize other information to adjust these limits or to determine other limits based upon best available technology and other considerations.

XIII. Notice of UPDES Requirement

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information.

XIV. Notice of Availability of Information

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

Prepared by:
William O. Moellmer, Ph.D.
Utah Division of Water Quality
801-538-6329

Grantsville 2008